

Pinned Box Joints

Interlocking joinery adds visual interest and mechanical strength



SIMPLE ELEGANCE

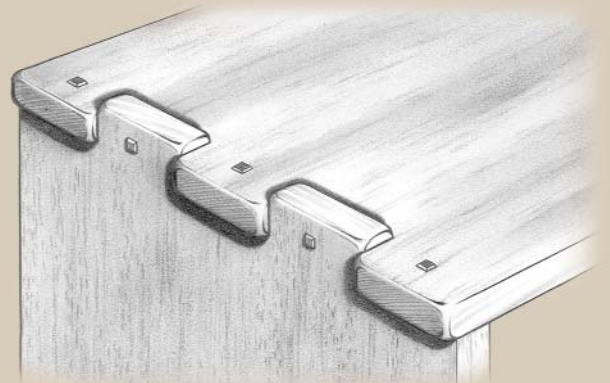
Square, broad tabs interlock at the corners of solid-wood cases and boxes, such as this tansu-style chest-on-chest. Because of the lack of long-grain gluing surface, each tab is pinned to add mechanical strength.

Boxes are the essential structure of all case pieces. That means a large part of furniture making boils down to joining pieces of wood to make boxes. There are many ways of doing this. Some, such as dovetails, draw attention to the joinery and the box structure itself, while others, such as post-and-panel construction, hide those aspects.

Enter the box joint, a close cousin of the dovetail that also becomes part of the overall look of a piece. Like the dovetail, the box joint is a way of solidly joining two planks or panels of solid wood end-to-end, appropriate for anything from jewelry boxes to full-size cabinet components. In essence, the box joint involves making a number of interlocking fingers on the ends of the pieces to be joined. The more well-known variety of the box joint, which I call a finger joint, has many small interlocking fingers. The fingers provide plenty of long-grain-to-long-grain gluing surface. The version I introduce here, however, has relatively broad fingers and must be pinned to add mechanical strength.

VARIATIONS ON THE PINNED BOX JOINT

PROTRUDING FINGERS



Greene-and-Greene work often features pinned box joints with fingers that protrude $\frac{3}{8}$ in. to $\frac{1}{2}$ in., with the ends rounded slightly before assembly.

DESIGN AND LAYOUT

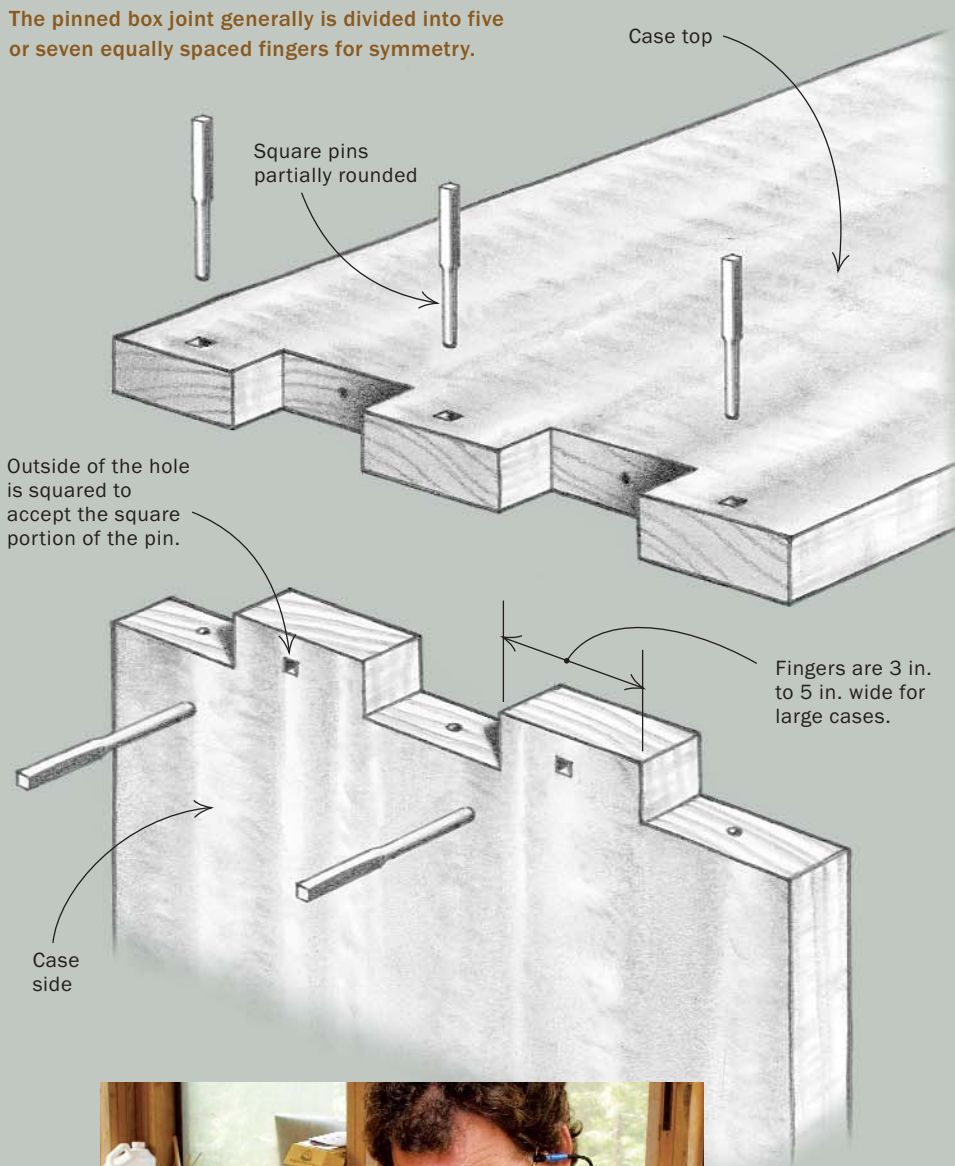
BY SETH JANOFFSKY

The pinned box joint is common in some traditional types of furniture, such as Japanese solid-carcase construction (tansu) and also the Craftsman work it inspired in this country, most notably that of Charles and Henry Greene. The pinned box joint also can be used to give an Asian flavor to contemporary work. There are a couple of attractive variations on this joint (see the drawings below). One is a dovetailed version, which also is seen in tansu furniture. Another is the Greene-and-Greene version, which has longer fingers that protrude slightly.

To me, the pinned box joint, with its large fingers, is most suitable for large boxes and full-size carcasses such as blanket chests. I think of finger joints as being more appropriate for small boxes, trays, and the like.

Cutting the joint

Box joints can be cut by machine, by hand, or as I like to do it, by both. I think it is easiest to cut these large joints in the same manner as hand-cut dovetails; that is, by clamping the workpieces vertically to the



Lay out one side of the joint. Mark the cheeks with a square, but use a marking gauge to scribe the depth, setting the gauge to the thickness of the mating piece.

CUT THE FINGERS

Cut one side of each joint, then transfer the layout to the other side. Use a handsaw to make precise cuts where the fingers join.



Saw the cheeks and chop out most of the waste. Janofsky uses a Japanese dovetail saw (left), which cuts on the pull stroke and should be held at the end of its handle for the best results. Cut right to the layout lines, being careful to keep the cut straight and square. Use a bandsaw or jigsaw (above) to remove most of the waste.

bench and sawing down the layout lines with a handsaw. As with a dovetail joint, it's best to cut one half of the box joint, transfer the lines to the other part, and then cut it to match.

On this joint, as on dovetails, I saw right to the layout lines because I think doing so is easier than trying to pare the joint to fit. Next, I remove most of the waste between the sawcuts with a jigsaw or bandsaw. I generally find it easiest to finish the cuts with a dado set on the tablesaw, working right to the sawkerfs and scribe line. This works well unless the pieces are very large and unwieldy. In such cases, I clean up with a router (see the photos at right).

Once the joints have been cut, glue-up is straightforward, but you need to remember all of the basic stuff: to cut whatever grooves are needed for bottoms or backs beforehand (through-grooves on one set of parts, stopped grooves on the other); to finish the insides of the parts before assembly, if it's appropriate to the project; and to do a dry-fit to ensure that everything goes together tightly and squarely.

Reinforcing the joint with pins

The first thing I do is mill the stock for the pins. I consider the wood for the pins rather carefully. On the one hand, I want a

TWO WAYS TO FINISH THE JOB

Depending on the size of the workpieces, the rest of the waste can be removed either on the tablesaw or with a router. Cut right to the sawkerfs and scribe line.



A tablesaw sled will handle shorter pieces. Adjust a dado set to cut to the scribe line. Use a sacrificial fence to minimize chipout on the back side of the cut.



Tall pieces are easier to handle with a router. Clamp pieces in pairs to give the router a wider bearing surface. Set the bit depth right to the scribe mark.



Transfer the layout to the mating piece.

Align the pieces carefully and make small tick marks. Then use a square to carry those marks around the mating workpiece.

PEG THE JOINTS

Be sure to drill the pinholes straight (left). Then square off the top section for the square pins.



Shopmade tool for squaring holes. Janofsky uses a thin, square bar of steel, tapered on a bench grinder, to square the holes. The wood block makes the tool easier to hold.



Whittle the pins. The pins start off square, sized to fit the top of the hole and roughly ½ in. extralong. Then all but the top 1 in. is whittled round.



Drive home the pins. Add glue to the pin and hole, and drive in each pin while holding it in alignment with a wrench.



Trim and plane the joint flush. Use a flush-cutting saw to trim the pins, then plane and/or sand the surfaces flush.



wood that harmonizes well with the wood of the carcase, neither too close nor too far away in tone. In general, I look for enough contrast to be distinct, yet not look flamboyant or call too much attention to itself. Also, the wood for the pins usually should be darker, not lighter, than the background wood. Often I end up using white oak for the pins. The Greene brothers favored ebony, but for me this is too strong a statement. In traditional tansu, Japanese furniture makers typically used utsugi, which is described as being somewhat similar to dogwood.

Functionally, the important thing is to choose a wood that is quite strong—after all, the point is to add strength to the joint. Also, the pins get hammered in with a fair amount of force.

Once I have milled strips of the stock for the pins, I drill holes through the parts of the joint from the outside, being careful to drill straight. Generally, I use pins between ⅛ in. and ¼ in. thick, depending on the thickness of the case pieces and the overall look of the piece.

Usually I prefer square pins, but this again is a matter of taste. Whether they're round or square, I leave the pins extralong by an identifiable amount (say, ½ in.) to allow for pounding. The extra length also lets me see

when the pins have penetrated the joint to the proper depth. If round, the pins need to be whittled or shaved, ideally in such a way that they are slightly too small at the inner ends and a bit too large at the outer ends.

If the pins are to be square, I whittle each pin almost round as described above but leave the outer portion square. My secret to a nicely defined pin is to square the outer part of each hole, too, by pounding into it a tapered piece of steel before installing the pins (see the top photo at right).

I fill all of the holes with glue and smear some on each pin for good measure. Then I pound the pins into the holes, hammering them down hard, but not so hard that the pins break or the carcase wood splits. Remember that the primary purpose is to strengthen the joint, so success is a matter of sizing the holes and the pins appropriately. Practice makes perfect.

When the glue is dry, I trim the pins and level the entire joint. Usually, a handplane is enough, but sometimes I pull out the belt sander for more serious stock removal.

And there you have it: a beautiful and strong joint you can be proud of, with a truly distinctive look. □

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